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Received 21 Oct 1985 Cnd.

October 18, 1985

Mr. Peter Westra
CANMET
Mineral Sciences Laboratories
Energy, Mines and Resources
555 Booth St.
Ottawa, Ont.
K1A 0G1

CONTRACT SERIAL NO. OSQ85-00100

TITLE: RECOMMENDED VALUES FOR
BRITHOLITE ORE OKA-2

CONTRACTOR: Materials Research
Laboratory Ltd.,

Dear Mr. Westra:

Re: DSS File no. 07SQ.23440-5-9062-7
Recommended values for britholite ore OKA-2

We have enclosed the results on chemical determination of 5 subsamples from a bottle containing Oka-2 reference material.

Before proceeding with the actual determination, the contents of the bottle were thoroughly mixed and divided into 5 equal parts to represent 5 subsamples. From each subsample, four parts containing 3 grams each were taken, dried at 105°C in the oven, and analyzed by the following techniques:

1. Thorium was determined by coulometric techniques by thoron complexation, using 1 gm sample;
2. Uranium was analyzed by fluorimetric techniques, using 1 gm sample;
3. Potassium was analyzed by atomic absorption techniques, using 0.1 gm sample; and
4. All R.E.E. were determined by direct current plasma spectrometry, using 1 gm sample.

The results listed in Table 1 do not represent averages of determinations and as such do not reflect any rounding off effects.

The thorium, uranium, and potassium determinations were carried out by following the chemical methods described in "Rock and mineral analysis" by John A. Maxwell, 1980. Direct current plasma techniques were used for the determination of R.E.E. as described below in stepwise fashion.

MICROMEDIA

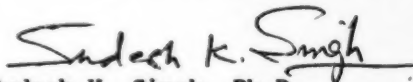
Mr. Peter Westra
Page 2
October 18, 1985

- Step 1: 1 gm sample was digested using HF-HClO_4 and taken in 1N HNO_3 .
- Step 2: The solution was filtered and the remaining residue was decomposed through lithium metaborate fusion.
- Step 3: The lithium metaborate extract was dissolved in 1N HNO_3 .
- Step 4: Both the solutions from Steps 1 and 3 were mixed together.
- Step 5: The solution from Step 4 was cleaned off the interfering elements by using Dowex resin column. The solution was eluted with 1N HNO_3 , washed with 2N HNO_3 , and R.E.E. were collected in 6N HNO_3 to 8N HNO_3 .
- Step 6: The R.E.E. solution was evaporated and redissolved in 1N HNO_3 . 3000 ppm lithium was used as a buffer solution and the solution was run through the direct current plasma spectrometer.

Please do not hesitate to call me should you have any questions regarding the analytical data. Meanwhile, we have enclosed our invoice for the work performed to date. We would appreciate it very much if the payment is made at the earliest.

Yours sincerely,

MATERIALS RESEARCH LABORATORY LTD.


Sudesh K. Singh, Ph.D.
President

SKS/ad
Encl.

TABLE 1

CHEMICAL ANALYSIS OF BRITHOLITE ORE OKA-2

Sample	Subsample	Chemical constituents - % by weight														
		*ThO ₂	La ₂ O ₃	CeO ₂	Pr ₆ O ₁₁	Nd ₂ O ₃	Sm ₂ O ₃	Eu ₂ O ₃	Gd ₂ O ₃	Tb ₄ O ₇	Dy ₂ O ₃	Er ₂ O ₃	Lu ₂ O ₃	**U	***K	Yb ₂ O ₃ , Tm ₂ O ₃ & Ho ₂ O ₃
Oka-2	1	2.98	6.10	14.14	1.94	4.92	0.93	0.19	4.64 x 10 ⁻¹	0.23	0.003	0.07	0.001	0.022	0.04	<0.001
	2	3.01	5.90	14.21	1.92	4.86	0.94	0.22	4.84 x 10 ⁻¹	0.22	0.004	0.08	0.001	0.021	0.05	<0.001
	3	3.21	6.20	14.11	1.89	4.88	0.90	0.19	4.76 x 10 ⁻¹	0.21	0.003	0.07	0.001	0.020	0.04	<0.001
	4	3.11	6.10	14.28	1.92	4.92	0.92	0.19	4.84 x 10 ⁻¹	0.23	0.003	0.07	0.001	0.022	0.04	<0.001
	5	3.22	5.90	14.15	1.94	4.86	0.91	0.19	4.80 x 10 ⁻¹	0.23	0.003	0.07	0.001	0.022	0.04	<0.001

- * Thorium oxide determination was done by spectrophotometric methods using thoron complex
- ** Uranium determination was done by fluorimetry
- *** Potassium determination was done by atomic absorption spectrophotometry
- All R.E.E. determinations were done by direct current plasma spectrometry

APPENDIX "C"

DISCLOSURE CERTIFICATION

To be completed by the Contractor and returned to:

R. Berti
Science Contracting Officer
Science and Professional
Services Directorate
Science Branch
Department of Supply and Services
Place du Portage, Phase III, 11C1
11 Laurier Street
Hull, Quebec
K1A 0S5

CONTRACT TITLE: Recommended values for Britholite Ore OKA-2

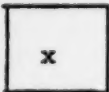
CONTRACT FILE NUMBER: 07SQ.23440-5-9062-7

CONTRACT SERIAL NUMBER: 0SQ85-00100



We certify that all applicable disclosures were submitted in compliance with General Conditions Research and Development and in accordance with the contract and the Science Procurement Officer's instructions.

OR



We certify that there are no disclosures to submit under the above referenced contract, referred to in General Conditions Research and Development.

SIGNATURE: S. K. Singh

PRINT NAME: Dr. S.K. Singh

TITLE: President

COMPANY NAME: Materials Research Laboratory Ltd.

DATE: October 18, 1985